

US EPA ARCHIVE DOCUMENT

MIDWEST CLEAN DIESEL INITIATIVE



Fact Sheet: Michigan

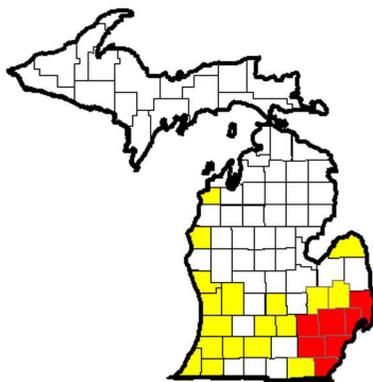
Reducing Diesel Emissions: Regulatory and Voluntary Efforts

The Environmental Protection Agency (EPA) is requiring emission reductions from new heavy-duty diesel engines. In October of 2006, on-road diesel fuel will contain 97 percent less sulfur. In 2007, on-road heavy duty diesel engines will have to meet tougher air quality standards which phase in through the year 2014. This combination of ultra-low sulfur fuel and advanced pollution control technology will mean that over the coming years, new on-road and non-road diesel engines rolling off production lines will be up to 95 percent cleaner than today's models.

However, millions of older-model heavy duty diesel engines all across the Midwest will continue to emit more pollution than their newer counterparts. Regional turnover of aging diesel vehicles will take decades, as diesel engines can operate for 20-30 years before retirement. The Midwest Clean Diesel Initiative will accelerate fleet turnover through engine retrofitting and replacement, thus accelerating air quality benefits to the public.

The Midwest Clean Diesel Initiative is a voluntary public-private partnership committed to reducing diesel emissions in the Midwest through operational changes, technological improvements, and use of cleaner fuels. Our goal is to affect one million diesel engines by 2010.

Meeting National Ambient Air Quality Standards



Michigan PM 2.5 and Ozone Nonattainment Areas

-  Ozone and PM 2.5 Nonattainment (52 Counties)
-  Ozone Nonattainment (52 Counties)
-  PM 2.5 Nonattainment (11 Counties)

USEPA has set National Ambient Air Quality Standards (NAAQS) for ozone and fine particulates (PM_{2.5}). Currently, counties across the state do not meet one or both of the ozone and PM_{2.5} NAAQS. Diesel emissions contribute to these areas not attaining this standard.



In 2003, EPA Region 5 awarded \$100,000 to the City of Detroit to retrofit 44 refuse trucks with catalysts. Using 2005 funds, EPA awarded \$388,519 to Okemos Public Schools (OPS) in 2006. OPS, located in the greater Lansing, Michigan area, will equip 372 buses with oxidation catalysts in school districts in 25 nonattainment counties in Michigan.

Impacts of Diesel Exhaust

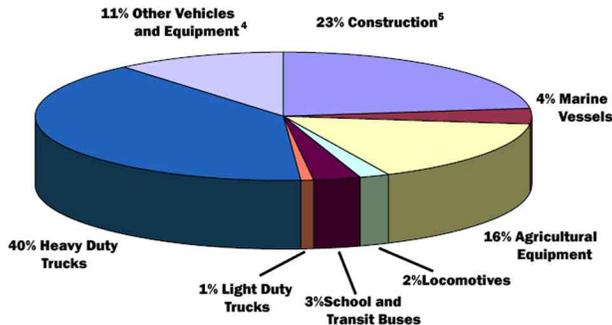
Emissions from diesel-powered engines contribute to oxides of nitrogen (NOx), particulate matter, and air toxics. NOx is one of the main ingredients involved in the formation of ground-level ozone, which can trigger serious respiratory problems. Reducing emissions from mobile, diesel-fueled sources (including trucks, buses, trains, construction equipment, and waterborne vessels) can reduce NOx levels across the Midwest.

Diesel emissions also contain air toxics, a class of pollutants which may cause negative health impacts including cancer and noncancer effects. EPA has concluded that diesel exhaust is likely to be carcinogenic to humans at occupational and environmental (ambient) levels of exposure. Diesel exhaust contains air toxics that are known carcinogens like benzene, in addition to gases that are classified as possible or probable carcinogens, such as formaldehyde, acetaldehyde, 1,3-butadiene, acrolein, and dioxin.

Exposure to diesel exhaust also likely causes noncancer health impacts. These impacts range from headaches, eye irritation, and nausea in acute (short term) exposures to respiratory system hazards in chronic (long term) exposures.

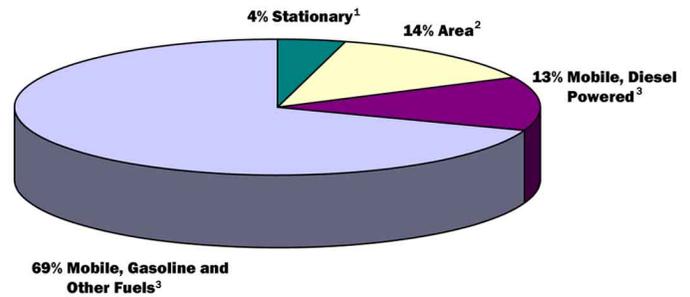
Diesel Emissions in Michigan: A Closer Look

Breakdown of Diesel PM_{2.5} Emissions In Michigan⁶



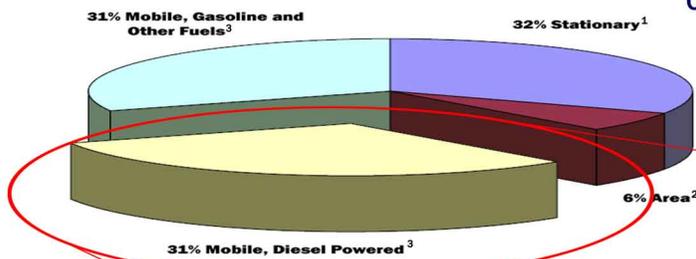
Diesel engines contribute to fine particulate matter across the region, which can cause premature death, and aggravate respiratory disease. In Michigan, mobile, diesel-powered sources contribute at least 12 percent of the PM_{2.5} emissions in the state.

Breakdown of Air Toxics Emissions in Michigan⁷



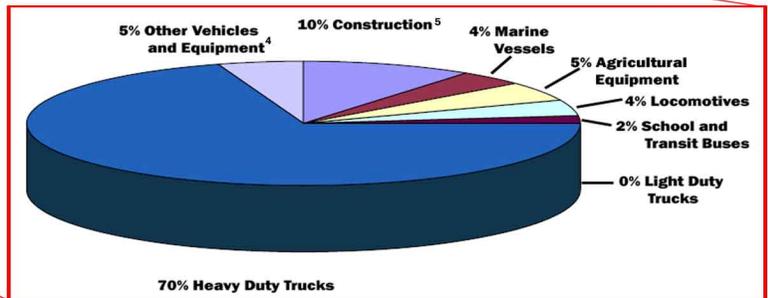
Diesel engines also contribute to air toxics emissions across the region. Toxic air substances found in diesel fuel include 1,3 Butadiene, Acetaldehyde, Acrolein, Benzene, and Formaldehyde. In Michigan, mobile, diesel-powered sources contribute 13% of total air toxics emissions of the aforementioned compounds.

Michigan's NOx Emission Sources⁶



Over half of Michigan's diesel-related NOx emissions come from heavy-duty trucks. The second largest source of diesel-related emissions come from construction equipment, with significant contributions coming from locomotives, marine vessels, and agricultural equipment. The Midwest Clean Diesel Initiative targets all sources of diesel emissions through operational and technological improvements, as well as cleaner fuels.

A significant portion of diesel emissions in the Midwest come from mobile, diesel-powered engines. NOx is a major component of diesel pollution, and can be used to illustrate the scope of diesel pollution. In Michigan, over 200,000 tons of NOx are emitted annually by mobile, diesel-powered engines.



Michigan: Breakdown of Diesel NOx Emissions⁶

Notes:

- 1) Examples of stationary sources are fuel combustion and industrial processes.
- 2) Examples of area sources are solvent utilization and waste disposal, dry cleaning facilities, and gas stations.
- 3) Examples of mobile sources are cars, trucks, boats, trains, and construction equipment.
- 4) Other diesel vehicles and equipment include recreational, lawn and garden, commercial, logging, airport ground support, underground mining, oil field, and material handling equipment.
- 5) Railroad maintenance equipment is included in the construction category.
- 6) Data sources for these charts are derived from EPA's 2002 National Emissions Inventory.
- 7) Air toxics emissions information data sources for 1,3 Butadiene, Acetaldehyde, Acrolein, Benzene, and Formaldehyde are derived from the 2002 National Emissions Inventory.



For more information please visit us on the web at:
<http://www.epa.gov/midwestcleandiesel/>

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